

What is claimed is:

1. A fused silica soot production furnace comprising:
 - a precursor delivery system for delivering silicon containing precursor to the furnace;
 - a burner for producing a flame and converting the precursor into a silica-containing soot; and
 - a crown constructed from a foamed refractory material having a network of interconnected pores.
2. The furnace of claim 1, wherein the pores in the foamed refractory material have a surface area greater than $0.5 \text{ m}^2/\text{g}$.
3. The furnace of claim 2, wherein foamed refractory material has a porosity greater than 50%.
4. The furnace of claim 2, wherein the foamed refractory has a density less than 1.5 g/cm^3 .
5. The furnace of claim 2, wherein the foamed refractory contains iron and sodium impurities less than 10 parts per million.
6. A method of manufacturing a fused silica boule comprising the steps of:
 - providing a furnace including crown constructed from a foamed refractory material having a network of interconnected pores; and
 - introducing a silicon-containing precursor into a flame to produce fused silica particles, collecting the particles on a collection surface and consolidating the particles on the collection surface to form a boule.
7. The method of claim 6, wherein the pores in the foamed refractory material have a surface area greater than $0.5 \text{ m}^2/\text{g}$.

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8. The method of claim 7, wherein foamed refractory material has a porosity greater than 50%.

9. The method of claim 7, wherein the foamed refractory has a density less than 1.5 g/cm³.

10. The method of claim 7, wherein the foamed refractory contains iron and sodium impurities less than about 10 parts per million.

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